Activities, Time, and Travel: Changes in Women's Travel Time Expenditures, 1990 - 2000

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ABSTRACT

This study examines the constancy and change in total travel time expenditures of women and men in the San Francisco Bay Area across the ten-year period between 1990 and 2000. The data sets analyzed are the 1990 and 2000 Bay Area Travel Surveys. Total travel time expenditures for women and men are examined across various socio-demographic and household attributes including age, race/ethnicity, employment status, and household life cycle category. The results show that for both women and men reported daily travel time expenditures increased significantly from 1990 to 2000. Additionally, the results show that for some subgroups of women and men differences in travel time expenditures have equalized from 1990 to 2000 while differences between other subgroups have increased.

INTRODUCTION

The evolution of the labor force, which includes more women and working mothers than ever before, has brought forth increased interest in the travel behavior of women, particularly the unique needs, burdens, and patterns associated with women's travel. A growing body of research has surfaced to address the variation in travel behavior between women and men, and from this research, several behavioral patterns have emerged. Results have been well documented over the past few decades, but as we approach equality in the work force, is this translating over time into equality within the household? Specifically, are travel patterns equalizing between women and men? This study addresses these questions by examining the constancy and change in total travel time expenditures of women and men across the tenyear period between 1990 and 2000 in the San Francisco Bay Area.

Studies on women's and men's travel have found many significant differences between the behavior and patterns of the two genders. The most pronounced finding is the increase of working women (and in particular, working mothers) in the labor force over the past few decades (Atkins, 1989, Schor, 1992; Hayghe, 1998). However, this increase has not translated into an equal share of household maintenance and child-care activities between women and men, though the disparity has perhaps become less stark over the past thirty years (Hamilton and Jenkins, 1989; Jones, 1989; Levinson, 1999). Specific to the San Francisco Bay Area, Taylor and Mauch (1998) found that White, Hispanic, and low-income women were particularly burdened with household maintenance activities. Another consistent difference in the literature is that women typically have shorter trip durations but make more trips than men (Hosking, 1989; Robinson, 1989; Chapple and Weinberger, 1998). In particular, women's work commutes tend to be shorter (MacDonald, 1999; Turner and Niemeier, 1997). Despite these consistencies, there is evidence of change.

A few studies have shown that women and men are becoming more alike in their travel for certain markets and for certain trip characteristics. McGuckin and Murakami (2004) found that single adult women and men without children are more similar than different in their travel, and Pucher and Renne (2003) show that, at the aggregate level, women and men are becoming more alike in their travel based on travel mode distributions. Robinson and Godbey (1997) report that from 1965 to 1985, total time spent on travel increased for both women and men, but women's travel time was consistently lower. For employed individuals, however, Robinson and Godbey (1997) found that total travel time in 1985 for working women was actually longer than for working men. This research extends these efforts to determine what changes have occurred in the Bay Area relative to travel time expenditures of women and men using the 1990 and 2000 Bay Area Travel Surveys.

METHODOLOGY AND DATA

Two household travel surveys from the San Francisco Bay Area are used in this analysis to characterize and compare the constancy and change in women's and men's travel time expenditures: the 1990 and 2000 Bay Area Travel Surveys (BATS1990 and BATS2000).

The 1990 survey was trip-based and collected only weekday travel information from individuals age five and over in more than 9,000 sample households. The most recent Bay Area household travel survey is BATS2000. More than 15,000 households participated. BATS2000 is an activity-based travel survey that collected information on all in-home and out-of-home activities over a two-day period, including weekday and weekend pursuits. Unlike the 1990 survey, BATS2000 collected travel information from all members of the household, regardless of age. For the purposes of this study, only individuals age five and over are included. Additionally, weekend, interregional, and external trips are excluded from this analysis.

For both data sets, survey results were weighted and expanded based on Census data, and trips were linked to produce the results contained in this report. For a detailed explanation of sample

weighting, expansion, and trip linking procedures see work by Purvis (2003). As mentioned previously, only weekday travel within the nine-county Bay Area is reviewed. The result is 16.9 million trips made in 1990 by more than 5 million persons. Just over 51% of respondents were women, and they made nearly 52% of 1990 trips. BATS2000 includes 19.6 million trips made by 6.1 million individuals. Approximately 52% of BATS2000 participants were female, and these women made over 53% of trips in 2000.

A Note on Travel Times

A few key points regarding travel time data extracted from the two surveys must be noted. For each travel survey, the travel times used for the analysis are derived from the reported start and end times for each trip record in the survey. At the onset of this analysis, the most significant change found between the 1990 and 2000 surveys is in reported durations, which are significantly higher in the 2000 survey. Table 1 shows the distribution of reported trip durations in 1990 and 2000. In 1990, 57% of trips were reported with durations of 15 minutes or less. In 2000, only 44% of trips were reported as less than 15 minutes. Conversely, nearly 30% of trips in the 2000 survey were reported with durations longer than 30 minutes compared to only 17% of 1990 trips.

Our hypothesis is that travel times are not significantly longer, but that respondents are overestimating travel times in 2000 as compared to 1990 (in particular, they are reporting many more trips longer than 30 minutes). Past works by Kollo and Purvis (1984) and Purvis (1994) show only very modest increases in total travel times and average travel time per trip for the San Francisco Bay Area. Purvis (1994) shows that increases in average trip durations by trip purpose from 1981 to 1990 range from 7.8% to 11.0%. In the 2000 survey, however, increases in average trip duration range from 23.0% to 62.0% between 1990 and 2000. Purvis (1994) also found that average total travel time per person decreased from 64 minutes in 1981 to 62 minutes in 1990 (a 3.7% decrease). The average total travel time per person from the 2000 survey is 92 minutes, a 48.5% increase from 1990.

In these examples, average travel time and total travel time are not increasing as significantly as the duration results of BATS2000 suggest. Since the heart of this research is an analysis of travel time expenditures, it is important that this substantial change in reported durations be considered. Because it is only a hypothesis that the duration increase is due to respondent overestimation, further analysis needs to be pursued in order to truly understand what is happening with the travel time data in the 2000 survey. Ideally, we would need extremely well-calibrated networks for 1990 and 2000 to compare distances between origin and destination locations with the reported travel times in both the 1990 and 2000 survey.

In this analysis, however, what is more important than the increase in total travel times and average trip durations from 1990 to 2000 is the difference in travel time expenditures between women and men in each of the survey years. It is obvious that 1990 and 2000 travel times will be significantly different, but the focus of this paper is shifts in travel time expenditures that have (or have not) occurred between women and men from 1990 to 2000.

TOTAL TRAVEL TIME EXPENDITURES

Travel time expenditures for women and men are examined in this report by trip purpose and select sociodemographic and household characteristics – age, race/ethnicity, employment status, and life cycle.

Trip Rates, Total Travel Time, and Average Travel Time in 1990 and 2000

Total travel time expenditures, trips per capita, and average travel times for women and men in 1990 and 2000 are provided in Table 2. Trip rates per capita remained relatively stable between the 1990 and 2000 surveys. However, the difference between women's and men's trip rates increased slightly in 2000. In 1990, women and men made approximately the same number of trips per day while women averaged nearly 5% more trips per day than men in 2000. Total travel time per capita increased from 1990 to 2000

for both women and men by more than 20 minutes per person. In 2000, men spent only 3.3 more minutes per day on travel compared to a 6.5-minute travel time gap between women and men in 1990. Average travel times for both men and women increased from 1990 to 2000 by approximately 7.5 minutes. However, the difference in average trip travel times between women and men remained relatively stable in the two survey years, with men traveling roughly two minutes longer per trip than women.

Travel Time Shares by Trip Purpose

Five different trip purpose categories are analyzed with relation to total travel time expenditures between 1990 and 2000: home-based work, home-based shop (other), home-based social/recreational, home-based school, and non-home-based. A more detailed description of the groupings used for each trip purpose is provided in the following paragraphs.

Home-based work, home-based school, and non-home-based trips are traditional trip-based definitions. Several activities are incorporated in the home-based shop (other) category such as shopping, household chores and personal care, sleep, personal services (banking, dry cleaning), time spent sick or at a medical appointment, non-work or non-shop internet use, picking up or dropping off passengers, or changing mode. Home-based social/recreational trips encompass activities such as meals, entertainment, hobbies, exercise, social activities, relaxing, volunteer work, and religious activities.

Figure 1 shows travel time shares by trip purpose for men and women in 1990 and 2000. Some interesting trends are evident. First, Figure 1 indicates that in 1990, men spent 10% more of their total travel time budgets on work trips than women. In 2000, the difference in travel time work shares between women and men is still roughly 10%, but the share of travel time spent on home-based work trips decreased for both sexes. At first this seems to be a counterintuitive result. Aren't women, in particular, working more? What does this decrease in the amount of travel time spent for work imply? The probable explanation is two-fold. Recall that the 1990 survey was trip-based while the 2000 survey was activity-based. Research suggests that intermediate stops are better captured with activity-based surveys (Stopher, 1992). Therefore, the decrease in time spent on work trips probably does not imply that men and women are spending less time traveling for work. It is likely that these results reflect the additional time spent on intermediate trips between the home and work location. For example, trips to the grocery store or gym after work that may not have been recorded with the traditional trip-based survey (or which may have been embedded in the work-to-home trip) may be captured with an activity-based survey (for example, BATS2000 explicitly asked respondents if they made any stops during their trip). For more information on BATS2000 methodologies and survey procedures see MORPACE (2002).

A review of travel time shares for the remaining trip purposes reveals that in 1990, women spent 10% more of their travel budget for non-work trips than men. Not much changed in 2000. Women spent 11% more of their total daily travel time on non-work trips. In both the 1990 and 2000 surveys, women spent 9% and 8% more of their travel time on home-based shop (other) activities. Recall that within the home-based shop category are activities like household chores, shopping, childcare and serving passengers. This result reinforces the idea that women are disproportionately burdened with household maintenance and child-care responsibilities. Another interesting result between women and men in the two surveys is that while travel expenditure shares for work trips have decreased for women and men by 6% and 5%, home-based social/recreational expenditures have increased by 5% for both groups. Travel time expenditures for shop (other) trips also increased from 1990 to 2000 by between 3% and 4%.

While Figure 1 does not explicitly show average travel times for work trips, they were calculated in this analysis. In 1990, men averaged 30 minutes between home and work while women commuted for only 20 minutes. In 2000, men spent 39 minutes commuting while women averaged a 36-minute commute. In both survey years, men had a longer commute time, but the difference between women and men is much less pronounced in 2000.

Effects of Socio-Demographic Variables

Travel time expenditures are analyzed next by various socio-demographic characteristics and household attributes. These attributes include age, race/ethnicity, employment status, and household life cycle category. In addition to controlling for gender, employment status is also used as a controlling factor in the analysis of each socio-demographic and household characteristic. The effects of each attribute on total travel time expenditures between women and men are discussed in the following sections.

Age

The first socio-demographic variable reviewed relative to travel time expenditures is age of the trip maker. Table 3 provides results for the eight age groupings studied. Differences in travel time expenditures between working women and men in 2000 equalized some from 1990 to 2000. In 1990, 18-22 year old women, and women between 40 and 64 spent significantly less time on travel than working men in these age groups. In 2000, however, these differences in travel time expenditures disappeared, except for working women in their fifties who still spent less time traveling per day than their male counterparts. In both 1990 and 2000, there was no significant difference between the amount of time employed women and men in their late twenties and thirties spent traveling. Though the differences were not found to be significant, the average travel times for seniors indicate that working men in this age group averaged more time on travel than women in this group.

For non-working women and men, there was no significant difference in travel time expenditures in 1990 for almost all age groups; the exception is that non-working men over 65 spent about 6 more minutes per day traveling than unemployed women over 65. In 2000, however, changes occurred for several age groups. Young girls reported more time traveling than young boys. Non-working men in their late twenties spent significantly more time (nearly 30 minutes) on travel than non-working women in this age group, and in fact, these young men averaged the most on travel across all age and employment groups. Another significant change from 1990 is that non-working women between 40 and 59 years old spent more time traveling than their male counterparts. While the travel time differences for non-working women and men between 18 and 22 and 30 and 39 were not significant in our sample, it is still perhaps meaningful to point out that these women had higher average travel times in 2000 than their male counterparts. This suggests that, barring the 23-29 age group, non-working women under 60 spent more time on daily travel than unemployed men.

An additional trend in Table 3 is that for both survey years, workers spent more time on travel than non-workers. At the aggregate level, the difference between working and non-working adults was roughly 27 minutes in 1990 and only 20 minutes in 2000 (averages for women and men combined). This holds true across all age groups, except 23-29 year old males. There is also a trend in time spent on travel for working women and men across the two survey years. In 1990, the amount of time working women spent traveling followed a sort of bell-shaped curve, peaking for women between 30 and 49. In 2000, however, the pattern across the age groups was not quite as clear. The highest travel time was for women in their forties, but the remaining age groups had similar travel time expenditures in 2000. Finally, the results in Table 3 suggest that children reported significantly less time on travel than adults in each survey year. To account for this and make a more appropriate comparison between workers and non-workers, age is controlled for in the remainder of the analysis.

Race/Ethnicity

Travel time expenditures by five race/ethnicity categories are explored in Table 4. Similar to Table 3, employment status is considered; however, in the case of non-workers, two groups are reviewed: adult non-workers, and non-working children.

For almost all race/ethnicity and employment categories, there was no significant difference in travel time expenditures between women and men in either survey year. The most interesting results by race/ethnicity are for Hispanic/Latino women and men. In 2000 working Hispanic/Latino men spent roughly 8 more minutes per day on travel than working Hispanic/Latina women. This same trend was evident in 1990 for non-working Hispanic/Latino women and men, but in 2000, the difference in travel times for this group was negligible. An interesting result for adult women is that in the year 2000 working Hispanic/Latina women averaged less time on travel than all other working women, but non-working Hispanic/Latina women spent more time on travel than other non-working women. Hispanic/Latina girls reported significantly more travel time than their male counterparts.

Household Life Cycle Category

An additional socio-demographic factor used to compare travel time expenditures among different groups of women and men is life cycle category. Household life cycle categories in this paper are based on categories used in the 2001 National Household Travel Survey. Use of the life cycle variable allows for the comparison of travel time expenditures for persons living alone, individuals without children, parents in single- and multi-adult households with children of various ages, and retirees. Table 5 shows the distribution of travel time per capita for working and non-working adults by the ten life cycle categories.

The results of the household life cycle analysis show that employed men in multi-adult households spent more time on travel than their female counterparts in both survey years. Aside from this finding, working women and men in each of the different household types in 2000 spent approximately the same time on travel across all life cycle groups. The exception is for single working mothers with very young children (<6). The sample of single working fathers with young children was small (only 37 respondents) and not statistically significant, but the travel time averages suggest that single working mothers with young children spent much more time traveling than single working fathers in this group. Additionally, these single working mothers averaged between 10 and 20 minutes more time on daily travel than almost all other workers (single working fathers with school-age children averaged 117 minutes per day on travel).

Table 5 shows that in general, non-working adult women in households with children have higher travel time expenditures than non-working men in family households. Additionally, in both survey years, non-working men living alone spent nearly 30 additional minutes per day on travel than non-working women living alone. This is also true for multi-adult households in 2000, though the difference in average travel time is only 11 minutes between non-working men and women. Women and men in retired households spent about the same amount of time traveling in each survey year.

CONCLUSIONS

Travel behavior research on the differences between women and men travelers has yielded interesting and fairly consistent results over the past two decades gauging the effect of the surge of women in the work force. However, as new policies take effect and society adjusts to the increasing role of women in the labor force, these observed trends in travel behavior are likely to change. This study examined the 1990 and 2000 Bay Area Travel Surveys to determine which changes have occurred in the ten-year period between 1990 and 2000. Specifically, this study has focused on the constancy and change in travel time expenditures of women and men from 1990 to 2000.

The findings suggest that at aggregate levels, the differences in travel time expenditures between women and men have indeed decreased over time and are less pronounced in 2000 than they were in 1990. However, when women and men are stratified by various socio-economic and household variables, different patterns emerge.

A few key points found in this study are listed below:

• Reported daily travel time expenditures significantly increased from 1990 to 2000 for both women and men.

- At the aggregate level, trip rates did not change from 1990 to 2000, though women in 2000 averaged slightly more trips per day than men.
- Between 1990 and 2000, the share of total travel time spent on home-based work trips has decreased, while shares for home-based shop and social recreational trips have increased for both women and men.
- For both survey years, workers spent more time on daily travel than non-workers.
- Except for women in their fifties, working women in 2000 across all age groups spent approximately the same amount of time on travel as men.
- In 2000, non-working men between 23 and 29 had the highest average travel time expenditures than other non-workers.
- Non-working young girls and non-working women between 18 and 22 and 30 and 59 averaged more time traveling than their male counterparts.
- Working Hispanic/Latino men spent 8 more minutes per day traveling in 2000 than working Hispanic/Latina women.
- Among workers, Hispanic/Latina women spent the least amount of time on travel. However, non-working adult Hispanic/Latina women had the highest average travel time of non-workers.
- Single working parents with young children spent more time on travel in 2000 than women and men in other household types.
- Non-working adult women in households with children traveled more than non-working men in family households.

The results of this study imply that for some subgroups, women and men are beginning to approach more equal levels of travel time expenditures. These results are encouraging, but further analysis should be undertaken and more data sets should be analyzed to determine if the changes are unique to the Bay Area, or are an artifact of comparing trip-based to activity-based surveys. Hopefully this style of reporting travel time expenditures will be replicated for other national, statewide, and metropolitan travel surveys to gain a better understanding of how women and men spend their time. The cross-classifications examined do show that differences in travel time expenditures are higher for some subgroups of women. Therefore, this data should be used to find ways in which these additional burdens can be alleviated. Further research on why these additional changes have taken place would also be beneficial. Additionally, many different combinations of socio-demographic and trip characteristics were omitted from this work (some are included in a previous version of this paper, see Gossen and Purvis, 2004), but certainly it would be useful and interesting to delve deeper into the survey data to determine what other changes in travel time expenditures have surfaced over the ten-year period between 1990 and 2000.

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REFERENCES

1. Schor, J. *The Overworked American: The Unexpected Decline of Leisure*. BasicBooks, A Division of Harper Collins Publishers, Inc., New York, 1992.

- 2. Atkins, S. Women, Travel and Personal Security. In *Gender, Transport and Employment*, Edited by M. Grieco, L. Pickup, and R. Whipp, Gower Publishing Company Limited, Aldershot, England, 1989, pp. 169-189.
- 3. Hayghe, H. V. Women's Labor Force Trends and Women's Transportation Issues. In *Women's Travel Issues: Proceedings from the Second National Conference October 1996*, Edited by S. Rosenbloom, FHWA-PL-97-024, Federal Highway Administration, Washington, D.C., 1998, pp. 9-14.
- 4. Hamilton, K., and L. Jenkins. Why Women and Travel? In *Gender, Transport and Employment*, Edited by M. Grieco, L. Pickup, and R. Whipp, Gower Publishing Company Limited, Aldershot, England, 1989, pp. 17-45.
- 5. Jones, P. Household Organisation and Travel Behavior. In *Gender, Transport and Employment*, Edited by M. Grieco, L. Pickup, and R. Whipp, Gower Publishing Company Limited, Aldershot, England, 1989, pp. 46-74.
- 6. Wells, C. The European Parliament, Travel and Equal Opportunities. In *Gender, Transport and Employment*, Edited by M. Grieco, L. Pickup, and R. Whipp, Gower Publishing Company Limited, Aldershot, England, 1989, pp. 190-198.
- 7. Levinson, D. M. Space, Money, Life-Stage, and the Allocation of Time. *Transportation*, Vol. 26, No. 2, 1999, pp. 141-171.
- 8. Taylor, B.D., and M. Mauch. Gender, Race, and Travel Behavior: An Analysis of Household-Serving Travel and Commuting in the San Francisco Bay Area. In *Women's Travel Issues: Proceedings from the Second National Conference October 1996*, Edited by S. Rosenbloom, FHWA-PL-97-024, Federal Highway Administration, Washington, D.C., 1998, pp. 371-406.
- 9. Robinson, J. P., and G. Godbey. *Time for Life: The Surprising Ways Americans Use Their Time*. The Pennsylvania State University Press, University Park, Pennsylvania, 1997.
- 10. Hosking, D. Organising the Domestic Portfolio: Gender and Skill. In *Gender, Transport and Employment*, Edited by M. Grieco, L. Pickup, and R. Whipp, Gower Publishing Company Limited, Aldershot, England, 1989, pp. 115-126.
- 11. Robinson, J. Americans on the Road. American Demographics, September 1989, p. 10.
- 12. Chapple, K., and R. Weinberger. Is Shorter Better: An Analysis of Gender, Race, and Industrial Segmentation in San Francisco Bay Area Commuting Patterns. In *Women's Travel Issues: Proceedings from the Second National Conference October 1996*, Edited by S. Rosenbloom, FHWA-PL-97-024, Federal Highway Administration, Washington, D.C., 1998, pp. 407-436.
- 13. MacDonald, H. I. Women's Employment and Commuting: Explaining the Links. *Journal of Planning Literature*, Vol. 13, No. 3, 1999, pp. 267-283.

14. Turner, T., and D. Niemeier. Travel to Work and Household Responsibility: New Evidence. *Transportation*, Vol. 24, 1997, pp. 397-419.

- 15. Kollo, H. P. H., and C. L. Purvis. Changes in Regional Travel Characteristics in the San Francisco Bay Area: 1960-1981. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 987, TRB, National Research Council, Washington, D.C., 1984, pp. 57-66.
- 16. Purvis, C. L. Changes in Regional Travel Characteristics and Travel Time Expenditures in San Francisco Bay Area: 1960-1990. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 1466, TRB, National Research Council, Washington, D.C., 1994, pp. 57-66.
- 17. Mauch, M. Gender-Based Differences in Travel Behavior: An Analysis of Travel Patterns in the San Francisco Bay Area. Master's Thesis, University of California, Los Angeles, 1996.
- 18. Vincent, M. J., M. A. Keyes, and M. Reed. *1990 NPTS: Nationwide Personal Transportation Survey Urban Travel Patterns*, FHWA-PL-94-018, Federal Highway Administration, Washington, D.C., 1994.
- 19. Goulias, K. G. Multilevel Analysis of Daily Time Use and Time Allocation to Activity Types Accounting for Complex Covariance Structures Using Correlated Random Effects. *Transportation*, Vol. 29, No. 1, 2002, pp. 31-48.
- 20. Viswanathan, K., and K. G. Goulias. Travel Behavior Implications of Information and Communications Technology in Puget Sound Region. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 1752, TRB, National Research Council, Washington, D.C., 2001, pp. 157-165.
- 21. McGuckin, N., and E. Murakami. *Examining Trip-Chaining Behavior: A Comparison of Travel by Men and Women*. http://npts.ornl.gov/npts/1995/Doc/chain2.pdf. Accessed August 31, 2004.
- 22. Pucher, J., and J. L. Renne. Socioeconomics of Urban Travel: Evidence from the 2001 NHTS. *Transportation Quarterly*, Vol. 57, No. 3, 2003, pp. 49-77.
- 23. Purvis, Charles L. *Sample Weighting and Expansion: Working Paper #1 Bay Area Travel Survey 2000.* Metropolitan Transportation Commission, Oakland, California, June 2003.
- 24. Purvis, Charles L. *Trip Linking Procedures: Working Paper #2 Bay Area Travel Survey 2000.* Metropolitan Transportation Commission, Oakland, California, June 2003.
- 25. U.S. Department of Transportation. 2001 National Household Travel Survey. http://nhts.ornl.gov/2001/index.shtml. Accessed August 25, 2004.
- 26. Stopher, P. R. Use of an Activity-Based Diary to Collect Household Travel Data. *Transportation*, Vol. 19, 1992, pp. 159-176.
- 27. MORPACE International, Inc. Bay Area Travel Survey 2000 Final Report Volume I: Methodology, Design, and Analysis of Results. MORPACE International, Inc., Farmington Hills, Michigan, March 2002.

28. MORPACE International, Inc. Bay Area Travel Survey 2000 Final Report – Volume II: Procedures, Pilot Test Results and Appendices. MORPACE International, Inc., Farmington Hills, Michigan, March 2002.

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FIGURE 1 Total Travel Time Shares by Trip Purpose and Gender

 $TABLE\ 1\ Distribution\ of\ Reported\ Trip\ Durations\ in\ BATS1990\ and\ BATS2000$

	1990		2000	
		Cumulative		Cumulative
	Percent of	Percent of	Percent of	Percent of
Travel Time	Trips	Trips	Trips	Trips
0.0 - 5.0 minutes	15.1%	15.1%	11.4%	11.4%
5.1 - 10.0 minutes	16.9%	32.0%	14.3%	25.7%
10.1 - 15.0 minutes	25.1%	57.1%	18.1%	43.7%
15.1 - 20.0 minutes	8.1%	65.2%	8.8%	52.5%
20.1 - 25.0 minutes	5.2%	70.4%	4.6%	57.2%
25.1 - 30.0 minutes	12.4%	82.8%	13.4%	70.6%
30.1 - 35.0 minutes	2.1%	84.9%	2.8%	73.4%
35.1 - 40.0 minutes	2.2%	87.1%	3.2%	76.6%
40.1 - 45.0 minutes	4.2%	91.3%	5.2%	81.8%
45.1 - 50.0 minutes	1.0%	92.3%	1.9%	83.7%
50.1 - 55.0 minutes	0.7%	93.1%	1.0%	84.7%
55.1 - 60.0 minutes	2.9%	95.9%	5.1%	89.8%
60.1 - 65.0 minutes	0.5%	96.4%	0.8%	90.6%
65.1 - 70.0 minutes	0.5%	96.9%	0.9%	91.4%
70.1 - 75.0 minutes	1.0%	97.9%	1.7%	93.1%
75.1 - 80.0 minutes	0.3%	98.1%	0.6%	93.7%
80.1 - 85.0 minutes	0.2%	98.3%	0.3%	94.1%
85.1 - 90.0 minutes	0.6%	98.9%	1.7%	95.7%
> 90.0 minutes	1.1%	100.0%	4.3%	100.0%
TOTAL	100.0%		100.0%	

TABLE 2 Trip Rates, Total Travel Time, and Average Travel Time by Gender

	1990				Percent Dif	ference
			2000		Between Women and Men	
	Women	Men	Women	Men	1990	2000
Trips per Capita	3.23	3.17	3.25	3.11	1.9%	4.5% **
Total Travel Time per Capita (minutes)	65.1	71.6	90.3	93.6	-9.1% **	-3.5% **
Average Trip Time (minutes)	20.1	22.6	27.8	30.1	-11.1% **	-7.6% **

^{**} Significant at the 0.01 level.

TABLE 3 Travel Time per Capita (in minutes) by Gender, Employment, and Age Group

					Percent D	ifference
	19	1990		000	Between Women and Men	
Age Group	Women	Men	Women	Men	1990	2000
Workers, All Ages						
5-17	-	-	-	-	-	-
18-22	65.1	76.1	98.1	94.0	-14.5% *	4.4%
23-29	74.5	76.0	103.3	102.6	-1.9%	0.7%
30-39	85.5	85.5	101.6	105.9	-0.1%	-4.0%
40-49	82.9	90.0	110.1	112.2	-7.9% **	-1.9%
50-59	71.4	86.2	95.8	108.2	-17.1% **	-11.5% **
60-64	64.9	86.6	103.7	106.0	-25.0% **	-2.1%
65-99	67.9	82.5	95.0	102.2	-17.7%	-7.0%
Non-Workers, All Ages						
5-17	41.3	39.4	66.2	60.8	4.8%	8.9% **
18-22	58.5	58.1	84.0	76.5	0.6%	9.8%
23-29	57.5	64.9	82.2	112.0	-11.3%	-26.7% **
30-39	59.6	66.0	88.8	83.0	-9.8%	6.9%
40-49	60.4	50.2	97.3	84.9	20.3%	14.6% *
50-59	58.1	50.3	89.5	76.2	15.4%	17.4% *
60-64	49.0	51.4	91.2	99.5	-4.8%	-8.4%
65-99	45.8	51.6	72.3	83.7	-11.4% *	-13.6% **
Total - Workers and Non-Workers						
Workers, All Ages	78.5	84.3	102.9	106.8	-6.9% **	-3.7% **
Non-Workers, Age 18 and over	53.9	55.8	84.9	86.0	-3.4%	-1.3%
Non-Workers, Age 17 and under	43.5	41.4	68.2	61.9	5.1%	10.2% **

The dashed line represents cells with no observations and values that could not be calculated.

^{*} Significant at the 0.05 level.

^{**} Significant at the 0.01 level.

TABLE 4 Travel Time per Capita (in minutes) by Gender, Employment, and Race/Ethnicity

	1990 2000		0.0	Percent Difference Between Women and Men		
Race/Ethnicity	Women	90 Men	Women 20	oo Men	1990	nen and Men 2000
Workers, All Ages						
White, Not Hispanic	79.1	86.9	103.8	106.3	-9.0%	-2.3%
Hispanic/Latino, Any Race	72.1	74.5	97.6	105.9	-3.2%	-7.8% *
Black/African American, Not Hispanic	93.3	88.1	103.4	106.0	5.9%	-2.5%
Asian/Pacific Islander, Not Hispanic	72.5	77.2	104.8	105.8	-6.1%	-0.9%
Other	75.1	80.5	101.0	120.6	-6.7%	-16.3% **
Non-Workers, Age 18 and over						
White, Not Hispanic	57.3	58.7	86.8	89.7	-2.3%	-3.2%
Hispanic/Latino, Any Race	40.6	56.6	92.9	80.7	-28.2% *	15.2%
Black/African American, Not Hispanic	52.2	40.7	83.9	80.9	28.3%	3.8%
Asian/Pacific Islander, Not Hispanic	49.7	52.1	73.9	78.3	-4.5%	-5.6%
Other	40.7	47.8	91.6	86.0	-14.8%	6.6%
Non-Workers, Age 17 and under	_					
White, Not Hispanic	42.9	42.0	64.5	64.1	2.2%	0.7%
Hispanic/Latino, Any Race	38.5	38.6	71.7	53.3	-0.2%	34.4% *
Black/African American, Not Hispanic	54.1	51.7	88.3	79.0	4.7%	11.8%
Asian/Pacific Islander, Not Hispanic	44.0	36.7	63.8	56.8	19.9%	12.2%
Other	46.4	43.9	60.4	65.1	5.7%	-7.1%
TOTAL	65.1	71.6	90.3	93.6	-9.1% **	-3.5% **

^{*} Significant at the 0.05 level. ** Significant at the 0.01 level.

TABLE 5 Travel Time per Capita (in minutes) by Gender, Employment, and Life Cycle Category

	1990		2000		Percent Difference Between Women and Men	
Life Cycle Category	199 Women	90 Men	Women	oo Men	Between Won 1990	nen and Men 2000
Workers, All Ages	•					
Single Adult, No Children	88.4	92.5	107.1	104.8	-4.5%	2.2%
Two or More Adults, No Children	74.7	81.2	99.5	106.9	-8.0% **	-6.9% **
Single Adult, Youngest Child Under 6	70.6 †	105.9 †	117.5	88.9 †	-33.4% †	32.2% †
Two or More Adults, Youngest Child Under 6	82.7	76.5	100.7	105.4	8.1%	-4.5%
Single Adult, Youngest Child 6-15	89.3	93.3	107.9	117.3	-4.2%	-8.0%
Two or More Adults, Youngest Child 6-15	82.5	88.1	107.6	111.4	-6.4% *	-3.4%
Single Adult, Youngest Child 16-21	76.6	81.9	98.3	106.5	-6.5%	-7.7%
Two or More Adults, Youngest Child 16-21	71.0	82.9	98.6	100.8	-14.3% **	-2.2%
Single Adult, Retired, No Children	-	-	-	-	-	-
Two or More Adults, Retired, No Children	-	-	-	-	-	
Non-Workers, Age 18 and over						
Single Adult, No Children	61.0	90.7	77.2	106.3	-32.7% *	-27.4% *
Two or More Adults, No Children	50.6	54.4	78.7	89.5	-7.0%	-12.1% **
Single Adult, Youngest Child Under 6	35.2 †	143.8 †	76.7 †	53.0 †	-75.5% †	44.7% †
Two or More Adults, Youngest Child Under 6	59.9	53.9 †	85.5	72.5	11.1% †	17.9%
Single Adult, Youngest Child 6-15	72.7	48.6 †	107.9 †	204.0 †	49.7% †	-47.1% †
Two or More Adults, Youngest Child 6-15	60.0	55.9	97.7	83.2	7.2%	17.4% *
Single Adult, Youngest Child 16-21	44.5	41.7 †	108.3 †	58.9 †	6.9% †	83.7% †
Two or More Adults, Youngest Child 16-21	51.1	54.7	73.1	64.4	-6.6%	13.6%
Single Adult, Retired, No Children	55.5	54.8	82.3	92.9	1.4%	-11.3%
Two or More Adults, Retired, No Children	49.9	54.0	83.8	85.6	-7.6%	-2.1%
TOTAL	65.1	71.6	90.3	93.6	-9.1% **	-3.5% **

The dashed line represents cells with no observations and values that could not be calculated.

[†] Insufficient sample size (less than 50 individuals).

^{*} Significant at the 0.05 level.

^{**} Significant at the 0.01 level.

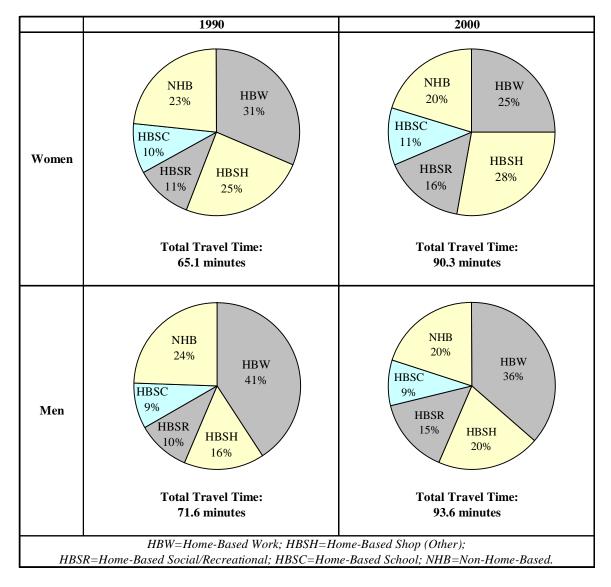


FIGURE 1 Total travel time shares by trip purpose and gender.